

EXTREME COLD TEMPERATURE TRAVELING

Cold Temperature Travel

Injuries such as frostbite and hypothermia are due to prolonged exposure to cold temperatures in travelers and are most common at northern latitudes and high elevations. Most of these are classified as “accidental hypothermia” and they tend to occur in younger people who may be participating in activities such as skiing or snowboarding, hiking or even working outdoors for prolonged periods in research environments. Prevention and avoidance of unnecessary risk is key to staying safe.

Factors involved in Cold Injuries

The most prominent factor in cold induced injuries is improper insulation of clothing and equipment.

An enormous amount of body heat is lost from the face, neck and hands, if they are left exposed. Coverage of the hands and feet should not be tight-fitting and snug. Instead they should fit closely but free of tightness or pressure. Old socks should be free of wrinkles that can act as pressure points. The ideal clothing to wear on the hands are mittens and not gloves. Gloves may be required for travelers that require dexterity for activities such as photography and surveying but only for short periods of time. Some experts advise wearing a mitten on one hand and a glove on the other if working in this way. Finger touch dexterity may not be possible in some environments but if required, silk or rayon gloves would be advisable. Metal surfaces such as surveying poles should be covered in adhesive tape. Even with the use of mittens, the thumbs should be folded into the hands in order to regain warmth in the entire hand. **Clothing must be kept dry at all times in cold weather environments. The hands and feet must be kept dry.** Even vapor barrier boots must be kept dry.



Triple layer mountaineering boots provide excellent insulation for extreme temperatures.

Perspiration and clothing

Perspiration is the major factor in keeping clothing dry in many cases. If perspiring, remove a layer of clothing or slow down. Wet boots can make the skin softer and more vulnerable to injury, such as blistering of the feet after prolonged exposure. Extra socks and insoles should be carried. An inner, smooth light sock should be worn, followed by one or two heavier outer pairs. Even personal care of the feet can be a factor in cold related injury. Excessive or overly thorough washing of the feet should be avoided as well. Advances in technology have allowed for better insulating boots, gloves and mittens.

Wind

Wind is a formidable foe to the cold and extreme weather traveler. When combined with cold temperatures the result can be extremely dangerous conditions. Exercise in cold weather conditions should not be too strenuous.

Caloric intake

Eating plenty of appetizing food, high in fat and carbohydrate is very important in cold weather environments. At altitudes above 10000 feet, carbohydrates are the most important, with protein being the least important. Avoidance of tobacco and alcohol at high altitudes is very important. Maintaining adequate

hydration is also of paramount importance.

External warmers

External heat sources such as chemical hand warmers can be of great assistance to the cold weather traveler. There are a variety of commercially available chemical hand and foot warmers. Electric foot warmers can also be useful in extreme environments. These have the benefit of not requiring the removal of footwear, which is not advisable in most cases, to insert warmers. Care has to be taken with bulky chemical warmers as these can result in skin burns and pressure points.

STRATEGIES FOR THE PREVENTION OF FROSTBITE

- ✿ Wear protective clothing - layers, loose and insulating
- ✿ Avoid constriction of body parts with clothing
- ✿ Stay dry
- ✿ Wear wind protection
- ✿ Hands:
 - ✿ Wear mittens instead of gloves
 - ✿ Use chemical hand warmers
- ✿ Feet:
 - ✿ Avoid tight fitting boots
 - ✿ Wear suitably warm boots such as triple-layer extreme altitude boots.
 - ✿ Use electric-heated insoles
- ✿ Ensure adequate nutrition, hydration and oxygenation
- ✿ Take aspirin (if not contraindicated)
- ✿ Keep your tetanus immunization current

